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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,467	06/27/2000	MATS LEIJON	705/72337-2	7642

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

WAKS, JOSEPH

ART UNIT	PAPER NUMBER
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2834

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Please find below and/or attached an Office communication concerning this application or proceeding.

AD

Office Action Summary	Application No. 09/509,467	Applicant(s) LEIJON ET AL.	
	Examiner Joseph Waks	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 and 57-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-55 and 57-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-5, 7-8, 10, 12-21, 38, 46-49, 51, 52, 54, 55** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Platzer (US 4,121,148)**.

Nikitin et al. disclose an alternating current electric machine 1 designed to be connected directly to a distribution or transmission network (Re column 1, lines 14-29), comprising winding 5 comprising a multi-layer electric cable 6 with a solid insulation and corona prevention layer 24. However, **Nikitin et al.** fail to disclose the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer, and the auxiliary power means arranged to provide the auxiliary power.

Elton et al. disclose in Figure an electric cable 100 having a first layer 104 with semiconducting properties surrounding a conductor 102 comprising a number of conductive elements in electric contact, a solid insulating layer 106 surrounding the first layer, a second layer 110 with semiconducting properties surrounding the insulating layer and connected to the earth for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine (Re column 1, lines 15-35).

Platzer discloses the auxiliary power means 5 arranged to provide the auxiliary power for the purpose of providing the synchronous generator with a self excitation system without use of a current transformer or a pilot exciter.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the machine as taught by **Nikitin et al.** and to provide the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer as taught by **Elton et al.** for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine and to simplify the structure of the machine winding.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the auxiliary power means arranged to provide the auxiliary power as taught by **Platzer** for the purpose of providing the synchronous generator with a self excitation system without use of a current transformer or a pilot exciter.

Re claim 3, the limitation of the second semiconducting layer forming a substantially equipotential surface surrounding the conductor is inherent to the structure disclosed in the combined machine.

Re claim 8, the limitation of each of the layers being firmly joined to an adjacent layer is inherent to the structure disclosed in the combined machine.

Re claims 14-16, the combined machine discloses the claimed invention except for the voltage ranges the main and the auxiliary windings are dimensioned for. It would have been

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obvious to one having ordinary skill in the art at the time the invention was made to design the main windings to be dimensioned for a range of the system distribution voltages it is design to be directly connected to, and the auxiliary winding voltage range in accordance with the auxiliary power demands since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

3. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Platzer (US 4,121,148)** as applied to claim 1 above and further in view of **Elton et al. (US 4,622,116)**.

The combined winding discloses all elements essentially as claimed. However, it fails to disclose at least two adjacent winding layers having a substantially same coefficient of thermal expansion.

Elton et al. (US 4,622,116) disclose in Figures 1a- 2 and in column 7, lines 38-44 a winding having two adjacent layers 12 and 13 a substantially same coefficient of thermal expansion for the purpose of withstanding without failure the process of thermal aging and cycling the winding system being exposed to.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined winding and to provide two adjacent winding layers having a substantially same coefficient of thermal expansion as taught by **Elton et al. (US 4,622,116)** for the purpose of withstanding without failure the process of thermal aging and cycling the winding system being exposed to.

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4. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Platzer (US 4,121,148)** as applied to claim 1 and further in view of **Shildneck (US 3,014,139)**.

The combined machine discloses all elements essentially as claimed. However, it fails to disclose the layers remaining adhere to each other when the insulated conductor is bent.

Shildneck discloses an insulated conductor or cable being flexible so it can be bent when forming the winding of dynamoelectric machine.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the flexible cable as taught by **Shildneck** for the purpose of forming the winding of dynamoelectric machine. The limitation of the layers remaining adhere to each other when the insulated conductor is bent is inherent to the structure disclosed in the combined machine.

5. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Platzer (US 4,121,148)** as applied to claim 10 above and further in view of **Breitenbach et al. (US 4,785,138)**.

The combined machine discloses the claimed invention except for the sheath.

Breitenbach et al. discloses the machine having a winding comprising cables protected by a sheath 10 for the purpose of preventing the cable from mechanical damage during installation and operation.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the cable with a protective sheath as taught by **Breitenbach et al.**

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for the purpose of preventing the cable from mechanical damage during installation and the operation.

6. **Claims 1, 22, 23, 40-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Messenger (US 3,908,161)**.

Nikitin et al. disclose an alternating current electric machine 1 designed to be connected directly to a distribution or transmission network (Re column 1, lines 14-29), comprising winding 5 comprising a multi-layer electric cable 6 with a solid insulation and corona prevention layer 24. However, **Nikitin et al.** fail to disclose the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer, and the auxiliary power means arranged to provide the auxiliary power.

Elton et al. disclose in Figure an electric cable 100 having a first layer 104 with semiconducting properties surrounding a conductor 102 comprising a number of conductive elements in electric contact, a solid insulating layer 106 surrounding the first layer, a second layer 110 with semiconducting properties surrounding the insulating layer and connected to the earth for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine (Re column 1, lines 15-35).

Messenger discloses the auxiliary power means comprising a separate auxiliary power generator 18 as an auxiliary power source including a permanent magnet generator 27 for the purpose of providing the synchronous generator 10 with a self excitation system and to power auxiliary systems when the main stator 11 is operated in a starter motor mode.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the machine as taught by **Nikitin et al.** and to provide the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer as taught by **Elton et al.** for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine and to simplify the structure of the machine winding.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the auxiliary power means arranged to provide the auxiliary power as taught by **Messenger** for the purpose of providing the synchronous generator with a self excitation system and to power auxiliary systems when the main stator is operated in a starter motor mode.

It would have been furthermore obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the auxiliary generator with the winding having the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer as taught by **Elton et al.** for the purpose of prohibiting development of the corona discharge in a high voltage auxiliary generator while simplifying the structure of the auxiliary generator winding.

7. **Claims 1, 24-37, 39, 50, 53, 57-60** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nikitin et al. (US 4,429,244)** in view of **Elton et al. (US 5,036,165)** and **Baker et al. (US 4,948,209)**.

Nikitin et al. disclose an alternating current electric machine 1 designed to be connected directly to a distribution or transmission network (Re column 1, lines 14-29), comprising winding 5 comprising a multi-layer electric cable 6 with a solid insulation and corona prevention layer 24. However, **Nikitin et al.** fail to disclose the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the insulating layer, and the auxiliary power means arranged to provide the auxiliary power.

Elton et al. disclose in Figure an electric cable 100 having a first layer 104 with semiconducting properties surrounding a conductor 102 comprising a number of conductive elements in electric contact, a solid insulating layer 106 surrounding the first layer, a second layer 110 with semiconducting properties surrounding the insulating layer and connected to the earth for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine (Re column 1, lines 15-35).

Baker et al. disclose in Figure 3 the auxiliary power means comprising a secondary winding of an earthling transformer 28 as an auxiliary power source connected to a busbar 25 for the purpose of forming the neutral reference potential for the generator and providing the synchronous generator with ground protection and to power auxiliary systems during starter motor operating mode.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the machine as taught by **Nikitin et al.** and to provide the first layer with semiconducting properties surrounding the conductor, the solid insulating layer surrounding the first layer, the second layer with semiconducting properties surrounding the

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insulating layer as taught by **Elton et al.** for the purpose of prohibiting development of the corona discharge in high powered electrical apparatus such as dynamoelectric machine and to simplify the structure of the machine winding.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to design the combined machine and to provide the auxiliary power means comprising a secondary winding of an earthling transformer as an auxiliary power source connected to a busbar as taught by **Baker et al.** for the purpose of forming the neutral reference potential for the generator and providing the synchronous generator with ground protection, and to power auxiliary systems during starter motor operating mode. It would have been furthermore obvious to one having ordinary skill in the art at the time the invention was made to provide an earthling transformer for a ground protection of a number of generators connected to a common distribution system since the examiner takes Official Notice the use of earth transformers for protection of multiple generator systems is well known in the art of electric power distribution systems and it would be within the level of ordinary skill in the art to interpolate a system serving a single generator for servicing the multi-generator system (Re for example the US Patent 4,189,208 to Fiorentzis).

Claims 27-37, 39 are rejected since the examiner takes Official Notice the use of the auxiliary systems for support power plant startup and operation such as auxiliary power busbars with regulated voltage and battery backed up voltage, the power electronic equipment with diode bridge, converters and separately driven auxiliary power generators supplying excitation current during the startup are well known in the art of power plant systems and it would be within the

level of ordinary skill in the art to select such equipment for providing the generators with ground protection and self-starting capabilities.

Response to Arguments

8. Applicants arguments filed January 15, 2002 have been fully considered but they are not persuasive.

In response to applicants arguments in Re. Nikitin et al. examiner direct applicants attention to column 1, lines 27-29 where the use of the high voltage cables for the stator windings is disclosed. Moreover, in column 3, lines 34-36 Nikitin et al. describe the high voltage elements 6 as a single or multi-layer high voltage cylindrical cables. Furthermore, Nikitin et al. discuss in column 1 the disadvantage of the prior art in view of low voltage winding that requires the step-up transformers. It would be obvious to one of ordinary skills in the art to understand that the described design of the high voltage cable beyond the 110kV (that is in the range of the voltages used in the modern high voltage distribution lines) is aimed to eliminate the step-up transformer or in other words directed to connect the generator directly to the high-voltage distribution line. Examiner also directs applicants attention to another patent issued to Nikitin et al. (US 4,477,690 or item 161 in IDS) that states in column 6, lines 1-6 that the invention aims to eliminate step-up transformers. In addition attached US Patent Number 4,430,590 to Nemeni et al. contemplates in column 2, lines 63-68 and column 3, lines 1-3 increasing the winding voltage up to 500kV and obviating the need for step-up transformers.

With respect to the suitability of the cable disclosed by Elton et al. US 5,036,165 examiner directs applicants attention to BACKGROUND OF THE INVENTION where Elton et al. clearly associate their invention with a high powered electrical apparatus such as a

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dynamoelectric machine. This teaching is sufficient to one of ordinary skills in the art familiar with machine designed by Nikitin et al. to contemplate usage of the cable disclosed by Elton et al. in the high voltage dynamoelectric machine for the purpose of simplifying the cable structure by eliminating the cooling while reducing the thickness of the cable insulation. The method of forming or using the cable in such machine is not germane to the issue of patentability of the device itself.

9. Applicant's arguments filed on June 13, 2002 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants clearly admit in page 1, lines 14-19 that the use of high voltage cables of multiple layers was contemplated and disclosed by Paul R. Siedler in Electrical World issue of 15 October 1932. Also in the same page, lines 20-25 and page 3, lines 13-24, applicants clearly state that suitable cables currently used in high voltage transmission lines could be used for such purpose. The same logic applies to the machine disclosed by Nikitin et al. as cited in last Office action. Therefore the combination of Nikitin et al. with Elton '165 is appropriate even if Elton would relate the disclosed cable only with the power transmission application. However, in column 1, lines 22-35 Elton discusses the use of the semi-conducting layer in high-powered generators for preventing the corona discharge. He also discloses the cable structure that is suitable for such duty. It would have been obvious to one having ordinary skills in the art that

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seeks the improvement of generators using electric winding formed of the cable such as disclosed by Nikitin et al. or Paul R. Siedler to use the cable disclosed by Elton '165 for the purpose of simplifying the cable structure by eliminating the cooling while reducing the thickness of the cable insulation. The way Elton discloses in Elton '565 the use of the of the semiconducting material in the generator is not related to the combination of Elton '165 with Nikitin et al.

Prior Art


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Waks whose telephone number is (703) 308-1676. The examiner can normally be reached on Monday through Thursday 8 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R Ramirez can be reached on (703) 308-1371. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.


JOSEPH WAKS
PRIMARY PATENT EXAMINER
TC-2800

JW